

Braids v1.8 Illustrated

09-21-15 - <http://vo1t.com/Vo1tlllustrated.html>



Braids is a digital Module with very high quality sound. It does a very good job of emulating analog signals and contains the latest in digital technology.

I'm not associated with Mutable Instruments, this module is special because it contains a museum of synthesis techniques. I decided to make this Encyclopedia to spotlight the modes inside and to reflect on synthesizers from the past that influenced them as well as a few from the future.

This manual of sorts is an open-source project and I new your help if you find any glaring mistakes (some of these modes I admit I'm not sure what's going on) please let me know.

modular@bobbories.com

ANALOG	Yamaha CS-80 Sawtooth Notch Width Depth/Polarity TIMBRE COLOR	VANGELIS BLADE RUNNER	SYNC TRIG The CS-80 sawtooth has a flaw at the start of the waveform that made it sound unique, the tiny notch can be increased in depth and polarity.
ANALOG	Variable Kobol Waveform Waveforms Slew Limiting & Distortion TIMBRE COLOR	VCO1 Voltage controlled oscillator	TRIANGLE SAWTOOTH SQUARE PULSE SYNC TRIG A morphing oscillator that can be tweaked into any classic waveform and anything in between. It first appeared in the RSF Kobol, MicroMoog and MultiMoog, today it's in the Voyager, Sub Phatty and Sub 37.
ANALOG	Sawtooth Square Morph Saw & PWM Morph TIMBRE COLOR	Roland	NORMAL NARROW SYNC TRIG Pulse width modulation can be found in many analog synthesizers, modulating the Sawtooth waveform is rare and can be found in the Roland Juno series.

ANALOG

Dual Square Hard Sync
Sync Frequency Balance

TIMBRE OSC1 COLOR OSC2

SYNC TRIG

2 square waves in sync with balance control, on the left is square and to the right is sync.

ANALOG

Dual Sawtooth Hard Sync
Sync Frequency Balance

TIMBRE OSC1 COLOR OSC2

SYNC TRIG

2 saw waves in sync with balance control, on the left is saw and to the right is sync.

ANALOG

Tri/Sine Folder & Morph
Folding Strength Sine/Tri Morph

TIMBRE SINE TRIANGLE COLOR

As more amplification is applied, instead of clipping, the waveform folds back onto itself.

FOLDING WAVEFORM

SYNC TRIG

Morphs between 2 different waveforms that are perfectly suited for unique folding.

DIGITAL

Band-Limited 2 Pulse Train
Sine/Comb Mix Detune Amount

TIMBRE SINE DIRAC COMB COLOR

MIX

Starting with the 1st sine turning this up will mix in each sine, until all the sines are mixed together.

FREQ 3

Detune will linearly offset the pitch of each sine.

Sinewaves linearly Detuned

400 420 460 480 500

SYNC TRIG

ANALOG

Sawtooth times 3
Osc 2 Frequency Osc 3 Frequency

TIMBRE -12 +12 -12 +12 -24 +24 -24 +24 COLOR

SYNC TRIG

Turn these on for fat vintage sound.

MiniMoog, MemoryMoog
Modcan Triple, Pulse 1 & 2
VolcaBass, VolcaKeys,
Dominion X, EMS Synthi,
Electro Comp 101,
Commodore 64

ANALOG

Square times 3

Osc 2 Frequency Osc 3 Frequency

TIMBRE COLOR

Turn these on for fat vintage sound.

MiniMoog, MemoryMoog
Modcan Triple, Pulse 1 & 2
VolcaBass, VolcaKeys,
Dominion X, EMS Synthesi,
Electro Comp 101,
Commodore 64

ANALOG

Triangle times 3

Osc 2 Frequency Osc 3 Frequency

TIMBRE COLOR

Turn these on for fat vintage sound.

MiniMoog, MemoryMoog
Modcan Triple, Pulse 1 & 2
Dominion X, EMS Synthesi,
Electro Comp 101,
Commodore 64

ANALOG

Sine times 3

Osc 2 Frequency Osc 3 Frequency

TIMBRE COLOR

Turn these on for fat vintage sound.

Modcan Triple

ANALOG

3 Sines Ring Modulated

Osc 2 Frequency Osc 3 Frequency

TIMBRE COLOR

Ring Modulators create the sum & difference between two frequencies.

350Hz+220Hz=570Hz
350Hz-220Hz=130Hz

SYNC
TRIG

DIGITAL

7 Super Saws Detuned

Detune Amount Highpass Filter

TIMBRE COLOR

A digital Sawtooth Animator that sounds like the anthem trance preset. The Roland JP-8000 was the first commercial synth to use this technique.

DIGITAL Saw & Tuned Comb Delay Tuned Delay Transposition Delay Feedback TIMBRE COLOR		SYNC TRIG The Comb Delay can be used for simple body resonance, flange or to get unusual waveshapes. The MicroQ was the first to have a comb filter.
DIGITAL Circuit Bent Toy Clock Rate Bit Crush TIMBRE COLOR		SYNC TRIG For more mayhem try setting these utility menus to extreme settings, lower the bit value & rate. Glitchy-ness with the signature setting is unique to each braids module.
DIGITAL Casio CZ Wave D-50 LPF Lowpass Filter Frequency Wave Morph TIMBRE COLOR		SYNC TRIG Casio CZ and Roland D50 style phase distortion simulating a lowpass filter.
DIGITAL Casio CZ Wave D-50 PKF Peaking Filter Frequency Wave Morph TIMBRE COLOR		SYNC TRIG Casio CZ and Roland D50 style phase distortion simulating a Peak filter.
DIGITAL Casio CZ Wave D-50 BPF Bandpass Filter Frequency Wave Morph TIMBRE COLOR		SYNC TRIG Casio CZ and Roland D50 style phase distortion simulating a Bandpass filter.

DIGITAL

Casio CZ Wave D-50 HPF
Highpass Filter Frequency Wave Morph

TIMBRE COLOR

SYNC
TRIG

Casio CZ and Roland D50 style phase distortion simulating a highpass filter.

VOCAL

Voice Simulator Ring Sync
Partial 2 Frequency Partial 3 Frequency

TIMBRE COLOR

Partial delays and frequency morphing waveform using sync and FM techniques.

VOCAL

80's Speech Synthesizer
Vowels Age/Gender

TIMBRE COLOR

STUTTER
TRIG

A special form of granular synthesis, it aids transformation between vocal imitation and granular textures.

VOCAL

Simple Vowel FOF Speech
Vowels Age/Gender

TIMBRE COLOR

Vocal Oscillator is routed through a variable filter matrix, simulating structures of the human vocal tract.

ADDITIVE

Additive Harmonics
Harmonic Frequency Harmonic Bandwidth

TIMBRE COLOR

Fourier Synthesis (Harmonic Series) control a bank of 12 sine's frequency & Bandwidth.

FM

FM Phase Modulation

Modulation Amount

Harmonic Ratio

0 10 LOW

1 2 3 4 5 6 7 8

TIMBRE

COLOR

TUNE RATIO

MODULATOR

° AMOUNT

CARRIER

OUTPUT

PHASE

John Chowning, a composer and researcher at Stanford University, developed some important new techniques in DX7 synths using Phase Mod.

FM

FM with Harsh Feedback

Modulation Amount

Harmonic Ratio

0 10 LOW

1 2 3 4 5 6 7 8

TIMBRE

COLOR

TUNE RATIO

MODULATOR

° AMOUNT

CARRIER

OUTPUT

FEEDBACK

PHASE

By feedbacking the result back into itself, new timbres can be created.

FM

FM with Chaotic Feedback

Modulation Amount

Harmonic Ratio

0 10 LOW

1 2 3 4 5 6 7 8

TIMBRE

COLOR

TUNE RATIO

MODULATOR

° AMOUNT

CARRIER

OUTPUT

WT FEEDBACK

PHASE

A harsher more unstable form of feedback, Modulator and Carrier are modulating each other.

Mode Exclusive to Braids

ADDITIVE

Bell Additive Synthesis

Damping

Inharmonicity of the sound

0 10 LOW

1 2 3 4 5 6 7 8

TIMBRE

TRIG

COLOR

DAMP RATE

TRIG

SINE 1

AMP ENV

SINE 2

AMP ENV

SINE 3

AMP ENV

SINE 4

AMP ENV

SINE 5

AMP ENV

SINE 6

AMP ENV

SINE 7

AMP ENV

SINE 8

AMP ENV

SINE 9

AMP ENV

SINE 10

AMP ENV

SINE 11

AMP ENV

HARMONICS

Fourier Synthesis, a bank of 11 sine generators with control of harmonic tuning and volume envelopes.

ADDITIVE

Metal Drum Additive Synth

Damping

Brightness

0 10 LOW

1 2 3 4 5 6 7 8

TIMBRE

TRIG

COLOR

DAMP RATE

TRIG

SINE 1

AMP ENV

SINE 2

AMP ENV

SINE 3

AMP ENV

SINE 4

AMP ENV

SINE 5

AMP ENV

SINE 6

AMP ENV

NOISE

RING MOD

LOWPASS

BRIGHTNESS

Fourier Synthesis, a bank of 6 sine generators with control of harmonic tuning and volume envelopes with narrow bands of spectrum noise.

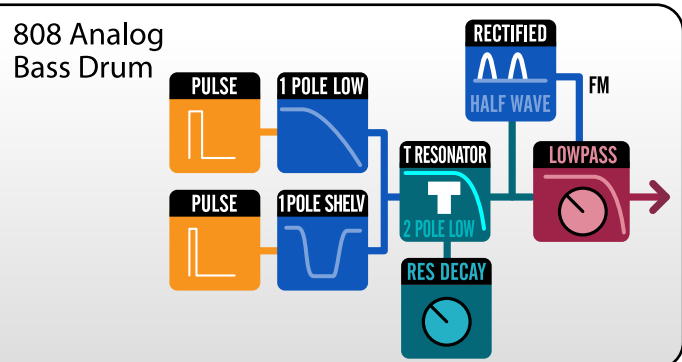
PERCUSSIVE

808 Kick Drum

Amp Envelope Tone

RESONANT DECAY LOWPASS FILTER

TIMBRE COLOR



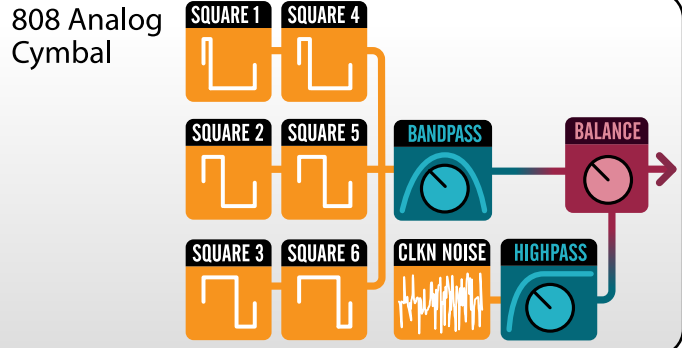
PERCUSSIVE

808 Cymbal

Bandpass Highpass Balance

FREQUENCY Cymbal Drone

TIMBRE COLOR



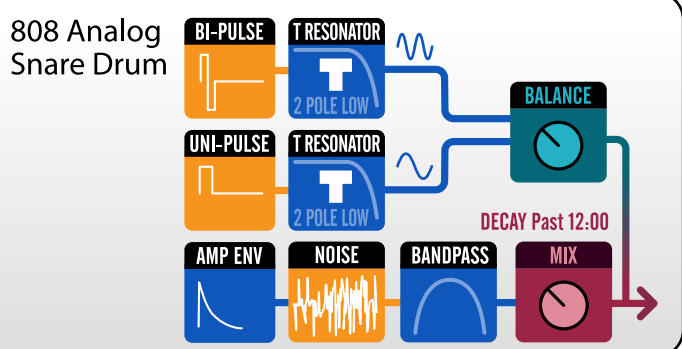
PERCUSSIVE

808 Snare Drum

Resonant Balance Noise Mix

SINE 1 SINE 2 SNAPPY & DECAY

TIMBRE COLOR



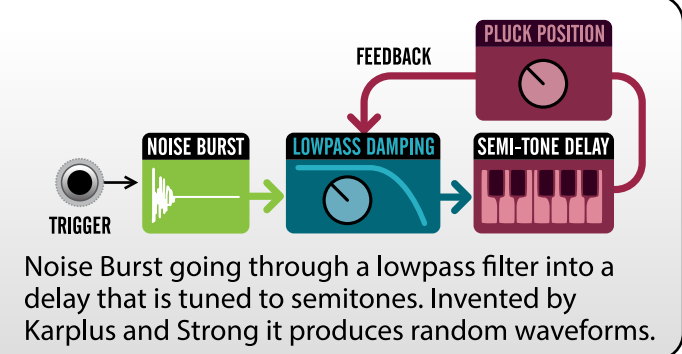
PHYSICAL MODEL

String Physical Modeling

Damping Pluck Position

TRIG

TIMBRE COLOR



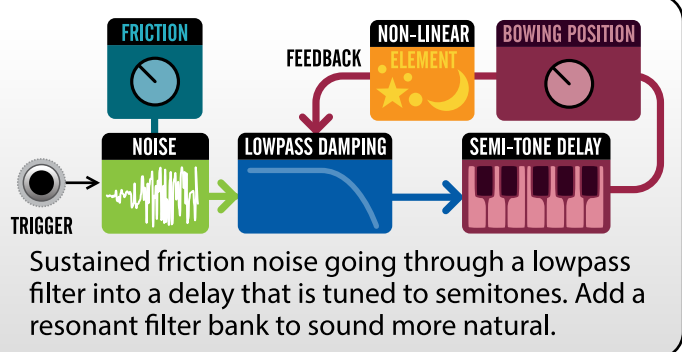
PHYSICAL MODEL

String Physical Modeling

Friction Level Bowing Position

TRIG

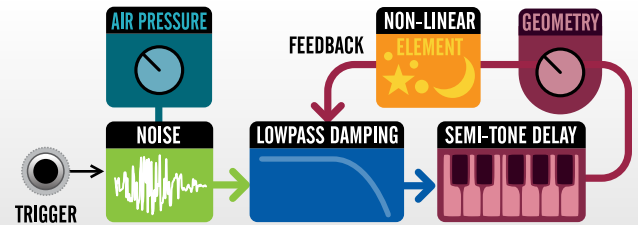
TIMBRE COLOR



PHYSICAL MODEL

Pipe Physical Modeling
Air Pressure Instrument Geometry

TIMBRE TRIG COLOR

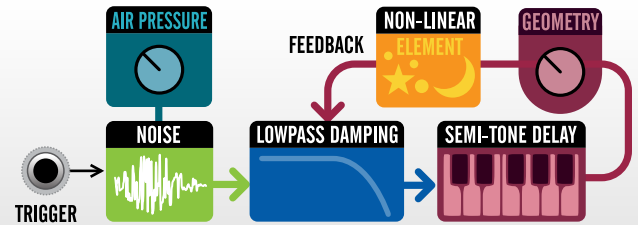


Sustained friction noise going through a lowpass filter into a delay that is tuned to semitones.

PHYSICAL MODEL

Pipe Physical Modeling
Air Pressure Flute Geometry

TIMBRE TRIG COLOR



Sustained friction noise going through a lowpass filter into a delay that is tuned to semitones.

WAVETABLE

20 Different Wavetables
Wavetable Sweep Select 1 of 20 wavetables

TIMBRE COLOR



MORPH SWEEP

Sweep from up to 16 waves for each Transwave.

01	Male PPG	000-015	11	Slap SQ-80 (8)	146-153
02	Female	016-031	12	Piano (3)	154-156
03	Choir	032-047	13	Organ!	157-171
04	Space Voice	048-063	14	Waves!	172-187
05	Tampura	064-076	15	Digital PPG	188-202
06	Shamus	077-092	16	Drone 1 (12)	203-212
07	Swept String	093-108	17	Drone 2 (8)	213-219
08	Bowed	109-124	18	Metallic D-50	220-235
09	Cello (8)	125-132	19	Fantasy	236-251
10	Vibes (12)	133-145	20	Bell (4)	252-255

TRANSWAVE

SYNC TRIG

WAVETABLE

16x16 Smooth Table Grid
X Scanning Y Scanning

TIMBRE COLOR



16x16 Smooth Table Grid

X SWEEP Y SWEEP

Morph through all 256 wavetables, X scans in horizontal direction and Y scans vertically.

SYNC TRIG

WAVETABLE

64 Waveform Linear Scan
Wavetable Scanner Interpolation CROSSFADE SAMPLES

TIMBRE COLOR



64 WT SWEEP

ROUGH SAMPLE NO CROSSFADE

SMOOTH SAMPLE NO CROSSFADE

SMOOTH SAMPLE MORPH CROSSFADE

BIT REDUCE SAMPLE MORPH CROSSFADE

INTERPOLATION

SYNC TRIG

WAVETABLE

1

32

TIMBRE

COLOR

4 Wavetable Oscillators

Wavetable Morph

Detune/Chords

Minor7

Major7

Major

Power

OctaveX4

OctaveX2

PowerX2

Detune

Minor

Sus2

Sus4

Minor9

Major9

Minor11

Major11

CHORDS

PowerX2

OctaveX2

OctaveX4

Power

Major

Major7

Minor7

Minor

Sus2

Sus4

Minor9

Major9

Minor11

Major11

Doubled

Doubled

Minor

Sus2

Sus4

Minor9

Major9

Minor11

Major11

SYNC

TRIG

Morph Order: Waves! Organ! Digital Metallic Male Choir Bell Vibes

NOISE

0

10

TIMBRE

COLOR

Noise w/Oberheim Filter

Filter Resonance

Filter Crossfade

CO 2

MODULATION

ENV 1

ENV 2

DECAY

ATTACK

SUSTAIN

ENV 1

ENV 2

DECAY

ATTACK

SUSTAIN

ESIZER EXPANDER MODULE

NOISE

RESONANCE

HIGHPASS

LOWPASS

CROSSFADE

Digital Noise going through an Oberheim SEM style multi-mode filter that morphs from Lowpass, Notch and Highpass .

NOISE

0

10

TIMBRE

COLOR

Twin Peaks Noise

Filter Resonance

Peak Distance from each other

NOISE

PEAK FILTER 1

PEAK FILTER 2

RESONANCE

DISTANCE

Noise into twin peak filters with variable distance. When Color is high the two peak frequencies are spread apart.

NOISE

LONG

SHORT

TIMBRE

COLOR

Clocked Digital Noise

Cycle Length

Bit Quantize

LENGTH OF LOOPING

CRUSHING BIT DEPTH

GRAIN DENSITY AND OVERLAP

GRAIN RANDOMIZATION

GRANULAR

0

10

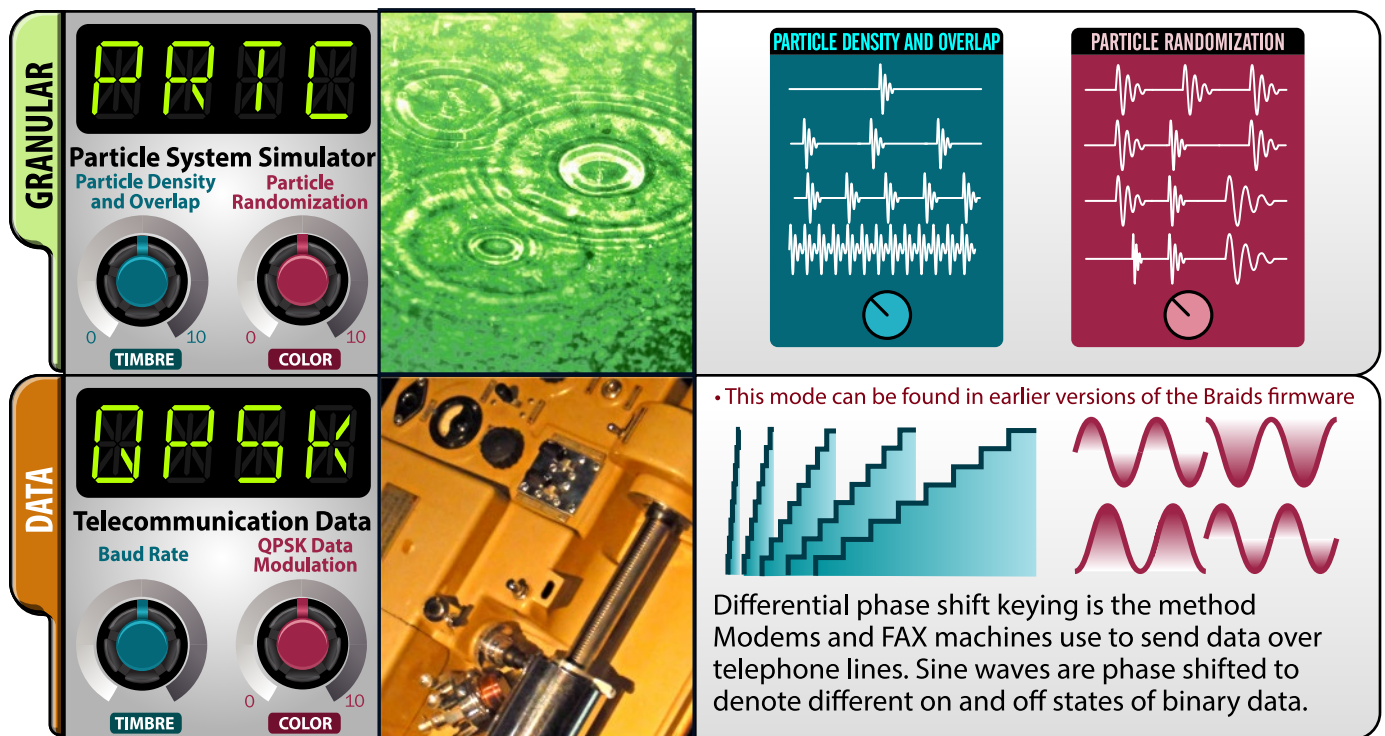
TIMBRE

COLOR

Granular Cloud Generator

Grain Density and Overlap

Grain Randomization



Global Options for all Modes

- BITS** Braids Bit-Depth, Vertical resolution (up to 16 bits) at low depths extreme distortion and grit occurs.
- RATE** Braids Sample-Rate, Horizontal resolution (up to 348kHz) some modes use lower rates.
- META** When on the FM CV input will change Braids modes instead of modulating the pitch.
- TRIG** Trig input Off: Osc Sync (not Modeling modes) On: Timbre Env. Amp: Amp Env. (6 preset shapes)
- TSRC** Choice between external trigger input or trigger on large Pitch changes. (auto-mode)

SYNC RESET OF OSCILLATOR

PHYSICAL MODELING TRIGGER

TIMBRE ENVELOPE

AMP ENVELOPE



TRIG



TRIG



TRIG



TRIG

TDEL Delay time of trigger for timing. (None, 125u, 250u, 500u, 1mS, 2mS, 4mS)

NATT Envelope Attack (0-15) The higher the number the longer it takes the envelope to rise.

NDEC Envelope Decay (0-15) The higher the number the longer it takes the envelope to fall.

NFM Frequency Modulation Envelope Amount (0-15)

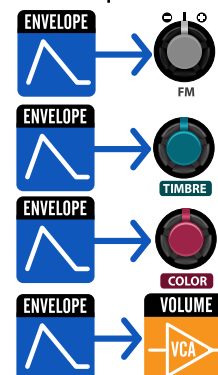
NTIM Timbre Envelope Amount (0-15)

NCOL Color Envelope Amount (0-15)

NVCA VCA Envelope Amount (0-15)

RANG Set the range of COARSE knob.

OCTV Transposition of Octaves switch.



ROOT

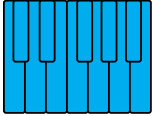
Root note for quantizer (C is the root note for the quantizer chart below)

QNTZ

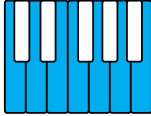
Quantizes CV input to semitones or 47 other scales, Pitch modulation to FM CV input is not quantized.

SEMI

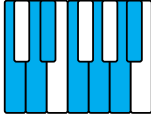
SEMITONES

**IONI**

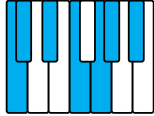
IONIAN

**DORI**

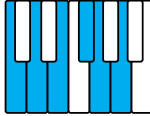
DORIAN

**PHRY**

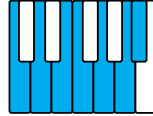
PHRYGIAN

**LYDI**

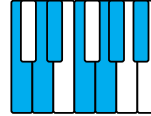
LYDIAN

**MIXO**

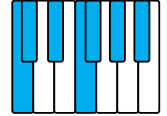
MIXOLYDIAN

**AEOL**

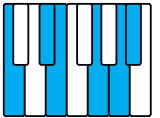
AEOLIAN

**LOCR**

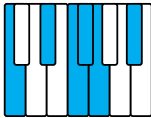
LOCRIAN

**BLU+**

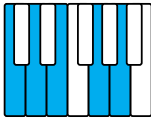
BLUES MAJOR

**BLU-**

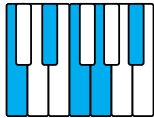
BLUES MINOR

**PEN+**

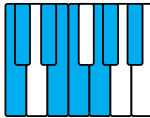
PENTATONIC MAJOR

**PEN-**

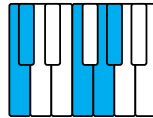
PENTATONIC MINOR

**FOLK**

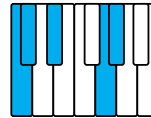
FOLK

**JAPA**

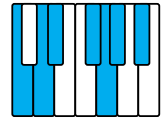
JAPANESE

**GAME**

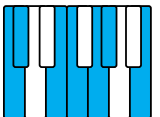
GAMELAN

**GYPS**

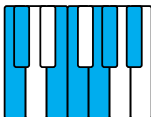
GYPSY

**ARAB**

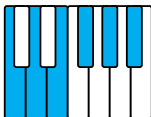
ARABIAN

**FLAM**

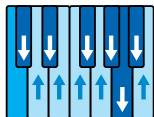
FLAMENCO

**WHOLE**

WHOLE TONE

**PYTH**

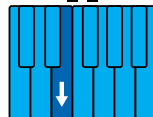
PYTHAGOREAN

**E♭4**

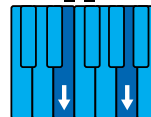
1_4_E♭

**E4**

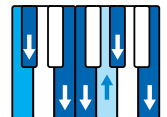
1_4_E

**E♭4**

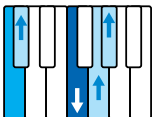
1_4_E♭

**BHAI**

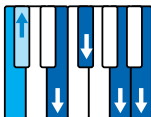
BHAIKAV

**GUNA**

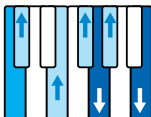
GUNAKRI

**MARW**

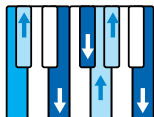
MARWA

**SHRI**

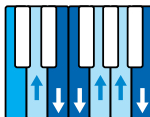
SHREE

**PURV**

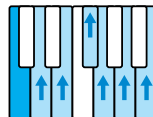
PURVI

**BILA**

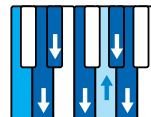
BILAWAL

**YAMA**

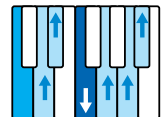
YAMAN

**KAFI**

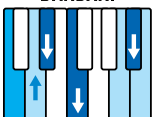
KAFI

**BHIM**

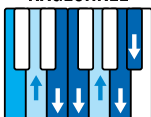
BHIMPALASREE

**DAR**

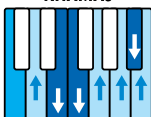
DARBARI

**RAGE**

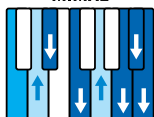
RAGESHREE

**KHAM**

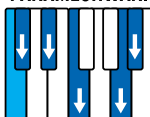
KHAMAJ

**MIMA**

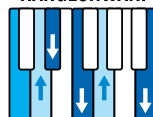
MIMAL

**PARA**

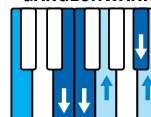
PARAMESHWARI

**RANG**

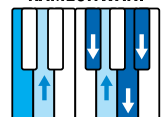
RANGESHWARI

**GANG**

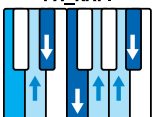
GANGESHWARI

**KAME**

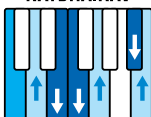
KAMESHWARI

**PAKA**

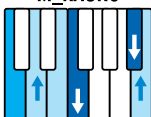
PA_KAFI

**NAT**

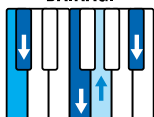
NATBHAIKAV

**KAUN**

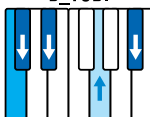
M_KAUNS

**BAIR**

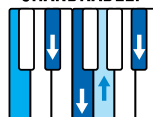
BAIRAGI

**BTOD**

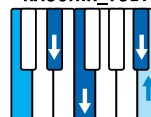
B_TODI

**CHAN**

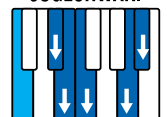
CHANDRADEEP

**KTOD**

KAUSHIK_TODI

**JOGE**

JOGESHWARI



↑ = Actual pitch is higher than note indicated.

↓ = Actual pitch is lower than note indicated.

FLAT

Stretch tuning with detune beating consistent with every octave.

DRAFT

Vintage type analog pitch drift and instabilities, makes the pitch more animated and alive.

SIGN

Applies glitches unique to each module giving your Braids it's own signature sound.

Informational Links



Yamaha CS-80 Sawtooth

https://en.wikipedia.org/wiki/Yamaha_CS-80



Variable Kobol Waveform

http://www.vintagesynth.com/misc/rsf_kobol.php

<http://www.polynominal.com/site/studio/gear/synth/Rsf-Kobol/Rsf-Kobol.html>



Sawtooth Square Morph

http://en.wikipedia.org/wiki/Roland_Alpha_Juno



Dual Square Hard Sync

http://en.wikipedia.org/wiki/ARP_Odyssey

https://en.wikipedia.org/wiki/Moog_Source



Dual Sawtooth Hard Sync

https://en.wikipedia.org/wiki/Moog_Multimoog



Tri/Sine Folder & Morph

<http://www.serge-fans.com>

<http://www.serge.synth.net>

<http://www.modulargrid.net/e/modules/browser?SearchName=Fold>



Band-Limited 2 Pulse Train

<http://www.csounds.com/manual/html/buzz.html>

<http://www.csounds.com>



Sawtooth times 3

<http://en.wikipedia.org/wiki/Minimoog>

http://en.wikipedia.org/wiki/List_of_Korg_products



Square times 3

http://en.wikipedia.org/wiki/Electronic_Music_Laboratories

http://en.wikipedia.org/wiki/MOS_Technology_SID



Triangle times 3

http://en.wikipedia.org/wiki/Waldorf_Music

http://en.wikipedia.org/wiki/Electronic_Music_Studios



Sine times 3

<http://www.modcan.com/emodules/triplelvc.html>



3 Sines Ring Modulated

http://en.wikipedia.org/wiki/Ring_modulation

<http://www.modulargrid.net/e/modules/browser?SearchName=Ring>



7 Super Saws Detuned

http://en.wikipedia.org/wiki/Roland_Alpha_Juno

<http://www.modulargrid.net/e/modules/browser?SearchName=Animat>



Saw & Tuned Comb Delay

http://en.wikipedia.org/wiki/Comb_filter



Circuit Bent Toy

http://en.wikipedia.org/wiki/Circuit_bending



Casio CZ Wave D-50 LPF

http://en.wikipedia.org/wiki/Casio_CZ_synthesizers

<http://www.makenoisemusic.com/mysteron.html>



Casio CZ Wave D-50 PKF

http://en.wikipedia.org/wiki/Roland_D-50



Casio CZ Wave D-50 BPF



Casio CZ Wave D-50 HPF



Voice Simulator Ring Sync http://en.wikipedia.org/wiki/Speech_synthesis#Formant_synthesis



80's Speech Synthesizer <http://www.modulargrid.net/e/flame-talking-synth>



Simple Vowel FOF Speech

https://en.wikipedia.org/wiki/Kurzweil_Music_Systems#K150_synthesizer



Harmonic Synthesis

<http://www.makenoisemusic.com/mysteron.html>

https://en.wikipedia.org/wiki/Fairlight_CMI



FM Phase Modulation

http://en.wikipedia.org/wiki/Kawai_Musical_Instruments

<https://en.wikipedia.org/wiki/Synclavier>



FM with Harsh Feedback

http://en.wikipedia.org/wiki/Frequency_modulation_synthesis

<http://www.modcan.com/emodules/fmvdo.html>



FM with Chaotic Feedback



Bell Additive Synthesis

http://en.wikipedia.org/wiki/Fourier_analysis

http://en.wikipedia.org/wiki/Kawai_Musical_Instruments



Metal Drum Additive Synth

http://en.wikipedia.org/wiki/Digital_waveguide_synthesis

http://en.wikipedia.org/wiki/Karplus-Strong_string_synthesis



String Physical Modeling

<http://mutable-instruments.net/modules/elements>

http://en.wikipedia.org/wiki/Waveguide#Sound_synthesis



String Physical Modeling



Pipe Physical Modeling



Pipe Physical Modeling



20 Different Wavetables

http://en.wikipedia.org/wiki/Wavetable_synthesis

<http://www.modulargrid.net/e/modules/browser?SearchName=wavetable>



16x16 Smooth Table Grid

<http://www.modulargrid.net/e/synthesis-technology-e350-morphing-terrarium>

<http://en.wikipedia.org/wiki/Ensoniq>



64 Waveform Linear Scan

http://en.wikipedia.org/wiki/Waldorf_Music



4 Wavetable Oscillators

<http://www.modulargrid.net/e/synthesis-technology-e370>



Noise w/Oberheim Filter

http://en.wikipedia.org/wiki/Oberheim_Electronics



Twin Peaks Noise

http://en.wikipedia.org/wiki/Filter_design



Clocked Digital Noise

<http://www.modulargrid.net/e/modules/browser?SearchName=Digital+Noise>



Granular Cloud Generator

http://en.wikipedia.org/wiki/Granular_synthesis

<http://www.modulargrid.net/e/synthesis-technology-e340-cloud-generator>



Particle System Simulator

<http://mutable-instruments.net/modules/clouds/>



Telecommunication Data



808 Kick Drum

http://en.wikipedia.org/wiki/Roland_TR-808

<http://www.modulargrid.net/e/modules/browser?SearchName=808>



808 Cymbal



808 Snare

SEMI	SEMITONES https://en.wikipedia.org/wiki/Semitone	GUNA	GUNAKRI ?
IONI	IONIAN https://en.wikipedia.org/wiki/Ionian_mode	MARW	MARWA https://en.wikipedia.org/wiki/Marva_(raga)
DORI	DORIAN https://en.wikipedia.org/wiki/Dorian_mode	SHRI	SHREE https://en.wikipedia.org/wiki/Shree_(raga)
PHRY	PHRYGIAN https://en.wikipedia.org/wiki/Phrygian_mode	PURV	PURVI https://en.wikipedia.org/wiki/Purvi
LYDI	LYDIAN https://en.wikipedia.org/wiki/Lydian_mode	BILW	BILAWAL https://en.wikipedia.org/wiki/Semitone
MIXO	MIXOLYDIAN https://en.wikipedia.org/wiki/Mixolydian_mode	YAMA	YAMAN https://en.wikipedia.org/wiki/Yaman_(raga)
AEOL	AEOLIAN https://en.wikipedia.org/wiki/Aeolian_mode	KAFI	KAFI https://en.wikipedia.org/wiki/Kafi_(raga)
LOCRI	LOCRIAN https://en.wikipedia.org/wiki/Locrian_mode	BHIM	BHIMPALASREE http://chandrakantha.com/raga_raag/bhimpalasi/bhimpilasi.html
BLU+	BLUES MAJOR https://en.wikipedia.org/wiki/Jazz_scale	DARB	DARBARI https://en.wikipedia.org/wiki/Darbari_Kanada
BLU-	BLUES MINOR http://www.pianoscales.org/blues.html	RAGE	RAGESHREE ?
PEN+	PENTATONIC MAJOR https://en.wikipedia.org/wiki/Pentatonic_scale	KHAM	KHAMAJ http://chandrakantha.com/raga_raag/khammaj/khammaaj.html
PEN-	PENTATONIC MINOR http://musictheorysite.com/pentatonic-scales	MIMA	MIMAL ?
FOLK	FOLK https://en.wikipedia.org/wiki/Folk_music	PARA	PARAMESHWARI ?
JAPA	JAPANESE https://en.wikipedia.org/wiki/Japanese_mode	RANG	RANGESHWARI ?
GAME	GAMELAN https://en.wikipedia.org/wiki/Gamelan	GANG	GANGESHWARI ?
GYPS	GYPSY https://en.wikipedia.org/wiki/Gypsy_scale	KAME	KAMESHWARI ?
ARAB	ARABIAN https://en.wikipedia.org/wiki/Arabic_scale	PAKA	PA_KAFI ?
FLAM	FLAMENCO https://en.wikipedia.org/wiki/Flamenco_mode	NATB	NATBHAIRAV http://www.parrikar.org/hindustani/bhairav/
WHOL	WHOLE TONE https://en.wikipedia.org/wiki/Whole_tone_scale	KAUN	M_KAUNS http://chandrakantha.com/raga_raag/malkauns/malkosh.html
PYTH	PYTHAGOREAN https://en.wikipedia.org/wiki/Pythagorean_tuning	BAIR	BAIRAGI https://en.wikipedia.org/wiki/Bairagi
EBx4	1_4_EB ?	BTOI	B_TODI https://en.wikipedia.org/wiki/Todi_(raga)
Ex4	1_4_E ?	CHAN	CHANDRADEEP ?
EAx4	1_4_EA ?	KTOI	KAUSHIK_TODI ?
BHAI	BHAIRAV https://en.wikipedia.org/wiki/Bhairav_(raga)	JOGE	JOGESHWARI ?

